

Trend Study 10R-9-00

Study site name: Winter Ridge Exclosure Out.

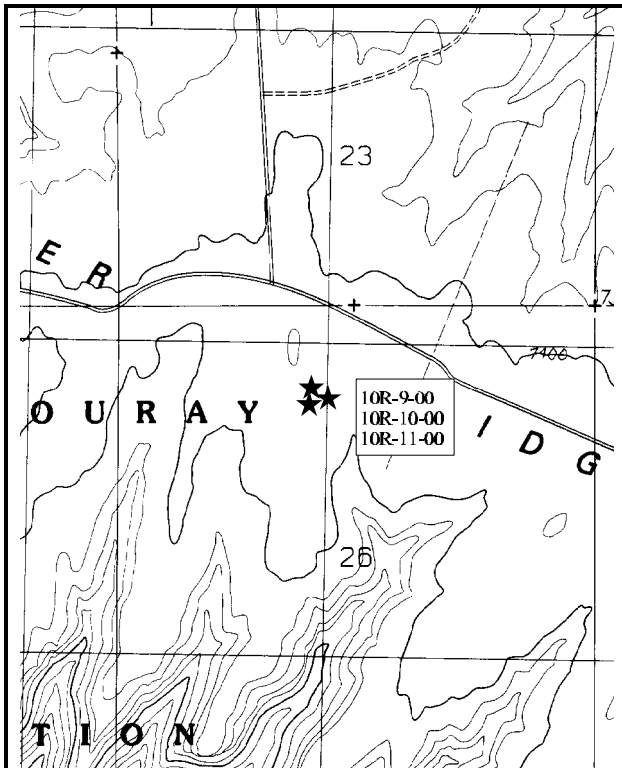
Range Type: Big Sagebrush

Compass bearing: Frequency baseline 94°M.

Footmark (first frame placement) 5 feet. Frequency belt placement; line 1 (11 & 71ft), line 2 (34 & 95ft), line 3 (59ft).

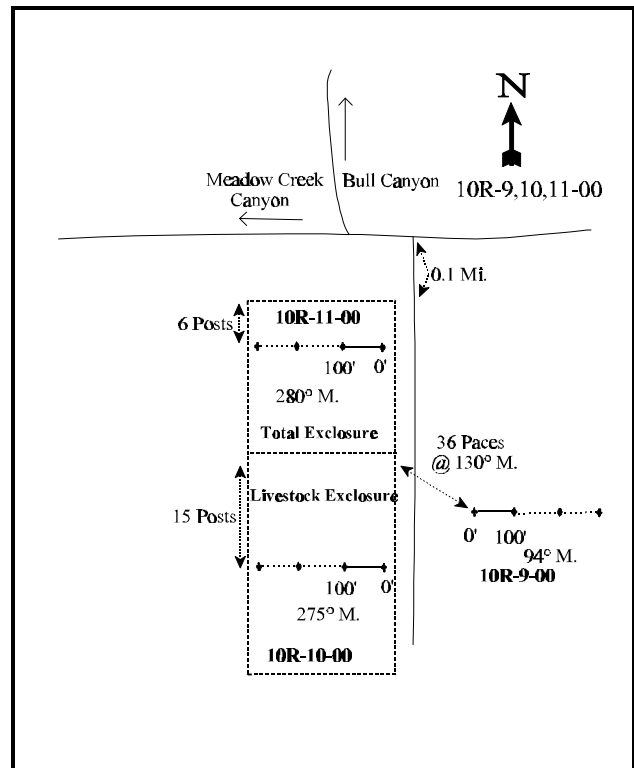
LOCATION DESCRIPTION

From the intersection where Meadow Creek Canyon and Bull Canyon meet, take the road to the south. Go 0.1 miles to the Winter Ridge Exclosure. From the "T" in the fence on the west side of the exclosure where the two parts of the exclosure meet, walk 36 paces at an azimuth of 130°M, to the 0-foot stake. The 0-foot stake is marked by browse tag number 63.



Map name: Tenmile Canyon North

Township 15S., Range 21 E, Section 26



Diagrammatic Sketch

UTM. 4371942.223 N, 625694.757 E

DISCUSSION

Trend Study 10R-9

The Winter Ridge Enclosure study is found outside of the enclosure complex on Winter Ridge. The enclosure was constructed in 1964. The trend study was established in 1997. The site has a slope of 4% with a westerly aspect and an elevation of 7,200 feet. The area is a mountain big sagebrush/grass type in association with scattered pinyon and juniper. It is used as winter range for deer and elk and is grazed by cattle during the summer. At the time the study was established in June 5, 1997, cattle were grazing on the site. Pellet group data estimated 44 elk, 2 deer and 30 cow days use/acre (109 edu/ha, 5 edu/ha and 74 cdu/ha). Data from 2000 estimate 22 elk, 2 deer and 19 cow days use/acre (54 edu/ha, 5 ddu/ha and 47 cdu/ha). Most of the cattle pats sampled in 2000 appear to be from the late summer or fall of 1999.

Soil at the site is moderately deep with an effective rooting depth estimated at just over 15 inches. It has a loam texture with a neutral soil reaction (7.2 pH). Phosphorus and potassium are low at 5.4 and 3.2 ppm respectively. Values less than 10 ppm for phosphorus and 70 ppm for potassium may limit normal plant growth and development. Soil pedestaling is evident around the base of shrubs, indicative of soil loss in the past. Current erosion appears minimal.

Mountain big sagebrush dominates this site with a current ('00) estimated density of 9,760 plants/acre which provides 86% of the browse cover. These plants show moderate to heavy use. Percent decadence was estimated at 24% in 1997, increasing to 49% in 2000. In addition, 33% (1,580 plants/acre) of the decadent sagebrush were classified as dying. Seedling and young plants are not abundant which is a cause of concern with regard to replacements of the decadent/dying plants.

Broom snakeweed was present at an estimated density of only 1,440 plants/acre in 1997. Density rapidly increased in 2000 to 21,940 plants/acre. About 75% of the population is currently mature, although young plants are still common and none are decadent. This would indicate a stable to slowly increasing population. Other browse species encountered in low densities include dwarf and stickleaf low rabbitbrush, and winterfat. Perennial grasses are abundant with six species sampled. Thickspike, mutton bluegrass, and Sandberg bluegrass are the most abundant. Forbs are diverse but most provide little cover. Two perennial forbs, mat penstemon and desert phlox, account for two-thirds of the forb cover. Most of the forbs associated with this site are low growing species. Although they afford some protection to the soil, they offer little forage value. Other prevalent species include Rose's pussytoes, globemallow, and longleaf phlox.

1997 APPARENT TREND ASSESSMENT

Soil is adequately protected at this time with some past erosion apparent. Bare ground is most vulnerable in the unprotected shrub interspaces. Cryptogams also protect the soil and could be used as an indicator of condition in the future. Mountain big sagebrush is the dominate browse with an overly mature age structure. Other browse are present, but in low densities. Grass accounts for two-thirds of the herbaceous cover with thickspike wheatgrass being the most abundant. Forbs are mostly low growing increaser species providing little forage.

2000 TREND ASSESSMENT

Trend for soil appears fairly stable. There is some limited erosion occurring within the shrub interspaces, but the abundant herbaceous vegetation and litter cover adequately protect the soil from serious erosion. Trend for browse is down slightly for the key species, mountain big sagebrush. Use is moderate to heavy (74% of the population), percentage of plants classified with poor vigor has increased (10 to 17%), and percent decadence has doubled from 24% to 49%. There are currently not enough seedlings and young to replace the decadent

plants that are dying. In addition, the density of the increaser, broom snakeweed has increased almost exponentially to 21,940 plants/acre, a 15-fold increase. Trend for the herbaceous understory is slightly up. Sum of nested frequency for grasses and forbs has increased and nested frequency of mutton bluegrass and Sandberg bluegrass has increased significantly.

TREND ASSESSMENT

soil - stable (3)

browse - down slightly (2)

herbaceous understory - slightly up (4)

HERBACEOUS TRENDS --

Herd unit 10R, Study no: 9

Type	Species	Nested Frequency		Quadrat Frequency		Average Cover %	
		'97	'00	'97	'00	'97	'00
G	Agropyron dasystachyum	340	400	94	111	3.00	5.98
G	Bouteloua gracilis	26	50	9	16	.93	2.45
G	Koeleria cristata	152	*56	52	22	1.75	.84
G	Poa fendleriana	171	*271	57	88	2.79	6.46
G	Poa secunda	191	*286	64	94	2.06	4.77
G	Stipa comata	56	*14	19	6	.26	.10
Total for Annual Grasses		0	0	0	0	0	0
Total for Perennial Grasses		936	1077	295	337	10.83	20.63
Total for Grasses		936	1077	295	337	10.83	20.63
F	Antennaria rosea	28	25	12	10	.53	.32
F	Arabis spp.	17	*2	6	1	.03	.00
F	Arenaria fendleri	-	6	-	2	-	.01
F	Astragalus convallarius	12	10	4	5	.02	.05
F	Castilleja linariaefolia	7	3	4	1	.04	.00
F	Crepis acuminata	4	-	1	-	.03	-
F	Cryptantha spp.	4	*-	4	-	.04	-
F	Erigeron eatonii	30	22	12	15	.06	.08
F	Erigeron pumilus	-	55	-	26	-	.22
F	Lesquerella spp.	22	*18	11	8	.10	.38
F	Lithospermum spp.	-	2	-	1	-	.00
F	Lygodesmia grandiflora	1	-	1	-	.03	-
F	Penstemon caespitosus	64	64	24	26	1.02	1.03
F	Petradoria pumila	-	6	-	4	-	.07
F	Phlox austromontana	190	273	73	88	2.20	4.28
F	Phlox longifolia	56	*22	26	8	.15	.06
F	Physaria acutifolia	-	3	-	1	-	.15

T y p e	Species	Nested Frequency		Quadrat Frequency		Average Cover %	
		'97	'00	'97	'00	'97	'00
F	<i>Sphaeralcea coccinea</i>	78	*133	31	54	.70	.87
Total for Annual Forbs		0	0	0	0	0	0
Total for Perennial Forbs		513	644	209	250	4.98	7.56
Total for Forbs		513	644	209	250	4.98	7.56

* Indicates significant difference at % = 0.10

BROWSE TRENDS --

Herd unit 10R, Study no: 9

T y p e	Species	Strip Frequency		Average Cover %	
		'97	'00	'97	'00
B	<i>Artemisia tridentata vaseyana</i>	94	98	12.95	19.15
B	<i>Ceratoides lanata</i>	1	2	.03	-
B	<i>Chrysothamnus depressus</i>	6	7	.16	.19
B	<i>Chrysothamnus viscidiflorus</i> <i>viscidiflorus</i>	-	-	-	.00
B	<i>Gutierrezia sarothrae</i>	30	75	.16	2.89
B	<i>Pediocactus simpsonii</i>	6	8	.01	.01
B	<i>Pinus edulis</i>	0	2	.03	-
B	<i>Tetradymia canescens</i>	0	1	-	-
Total for Browse		137	193	13.34	22.25

BASIC COVER --

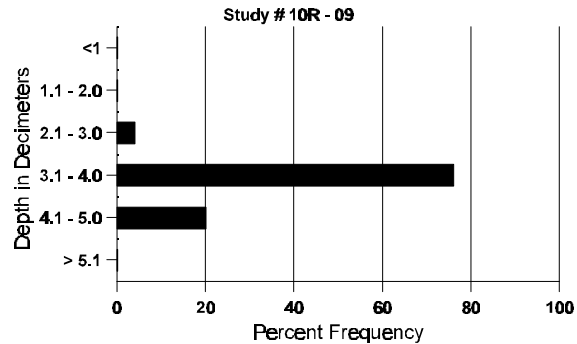
Herd unit 10R, Study no: 9

Cover Type	Nested Frequency		Average Cover %	
	'97	'00	'97	'00
Vegetation	453	559	31.92	47.74
Rock	26	22	.11	.04
Pavement	73	62	.54	.18
Litter	497	539	25.17	40.56
Cryptogams	351	322	15.88	14.20
Bare Ground	396	468	31.46	38.67

SOIL ANALYSIS DATA --
Herd Unit 10R, Study no: 09

Effective rooting depth (inches)	Temp °F (depth)	PH	% sand	% silt	% clay	% OM	PPM P	PPM K	dS/m
15.4	61.2 (14.6)	7.2	35.6	38.8	25.6	1.44	5.41	3.2	0.45

Stoniness Index



PELLET GROUP FREQUENCY --
Herd unit 10R, Study no: 9

Type	Quadrat Frequency		Pellet Transect			
			Pellet Groups per Acre		Days Use per Acre (ha)	
	'97	'00	'97	'00	'97	'00
Rabbit	14	5	44	44	N/A	N/A
Elk	24	17	566	287	44 (107)	22 (55)
Deer	4	11	26	26	2 (5)	2 (5)
Cattle	2	4	357	226	30 (73)	19 (47)

BROWSE CHARACTERISTICS --

Herd unit 10R, Study no: 9

A Y G R E		Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Artemisia tridentata vaseyana																		
S	97	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
	00	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3
Y	97	11	-	-	-	-	-	-	-	-	11	-	-	-	220			11
	00	23	8	-	9	-	-	-	-	-	40	-	-	-	800			40
M	97	18	147	75	4	2	-	5	-	-	251	-	-	-	5020	21	27	251
	00	41	64	32	14	2	56	-	-	-	207	-	2	-	4180	20	23	209
D	97	42	24	11	2	3	-	-	-	-	47	-	-	35	1640			82
	00	20	93	64	14	20	23	5	-	-	160	-	-	79	4780			239
X	97	-	-	-	-	-	-	-	-	-	-	-	-	-	1600			80
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	1680			84
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'97		51%			25%			10%			+30%							
'00		38%			36%			17%										
Total Plants/Acre (excluding Dead & Seedlings)														'97	6880	Dec:	24%	
														'00	9760		49%	
Ceratoides lanata																		
M	97	1	-	-	-	-	-	-	-	-	1	-	-	-	20	6	6	1
	00	-	-	3	-	-	-	-	-	-	3	-	-	-	60	4	5	3
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'97		00%			00%			00%			+67%							
'00		00%			100%			00%										
Total Plants/Acre (excluding Dead & Seedlings)														'97	20	Dec:	-	
														'00	60		-	
Chrysothamnus depressus																		
Y	97	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
	00	5	-	-	-	-	-	-	-	-	5	-	-	-	100			5
M	97	11	-	-	-	-	-	-	-	-	11	-	-	-	220	3	7	11
	00	12	-	1	-	-	-	-	-	-	13	-	-	-	260	3	7	13
D	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	2	-	-	1	-	-	-	-	-	1	-	-	2	60			3
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'97		00%			00%			00%			+38%							
'00		00%			05%			10%										
Total Plants/Acre (excluding Dead & Seedlings)														'97	260	Dec:	0%	
														'00	420		14%	

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Gutierrezia sarothrae																		
S	97	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	00	57	-	-	-	-	-	-	-	-	-	-	-	1140			57	
Y	97	8	-	-	-	-	-	-	-	-	8	-	-	160			8	
	00	276	-	-	-	-	-	-	-	-	276	-	-	5520			276	
M	97	64	-	-	-	-	-	-	-	-	64	-	-	1280	5	6	64	
	00	795	-	-	23	-	-	-	-	-	818	-	-	16360	4	4	818	
D	97	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	00	3	-	-	-	-	-	-	-	-	3	-	-	60			3	
X	97	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	00	-	-	-	-	-	-	-	-	-	-	-	-	220			11	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'97		00%			00%			00%			+93%							
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'97	1440	Dec:	0%			
												'00	21940		0%			
Opuntia spp.																		
M	97	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0	
	00	-	-	-	-	-	-	-	-	-	-	-	-	0	4	5	0	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'97		00%			00%			00%										
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'97	0	Dec:	-			
												'00	0		-			
Pediocactus simpsonii																		
Y	97	1	-	-	-	-	-	-	-	-	1	-	-	20			1	
	00	2	-	-	-	-	-	3	-	-	5	-	-	100			5	
M	97	5	-	-	-	-	-	-	-	-	5	-	-	100	1	3	5	
	00	8	-	-	-	-	-	1	-	-	9	-	-	180	1	2	9	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'97		00%			00%			00%			+57%							
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'97	120	Dec:	-			
												'00	280		-			
Pinus edulis																		
Y	97	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	00	2	-	-	2	-	-	-	-	-	4	-	-	80			4	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'97		00%			00%			00%										
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'97	0	Dec:	-			
												'00	80		-			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.	Total
		1	2	3	4	5	6	7	8	9	1	2	3	4			
Tetradymia canescens																	
Y	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>						
		'97			00%			00%			00%						
		'00			00%			00%			00%						
Total Plants/Acre (excluding Dead & Seedlings)												'97	0	Dec:	-		
												'00	20		-		